

# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Apparatus for Scalding the Carcasses of Animals

I, HANS PILLER (Sole personally liable partner of the firm of ANTON PILLER K.G.), a German Subject, of 23, Herzberger Strasse, 336 Asterode/Harz, Germany, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to apparatus for scalding the carcasses of animals, particularly, but not exclusively, those of pigs and poultry, comprising a plurality of sections and at least one suspension rail along which trolleys, each supporting a carcass, are driven, and means for producing and circulating hot, moist air.

In such apparatus the animal carcass is treated with moisture-saturated air at 65°C. until, in the case of pigs, the bristles in the outer skin can be scraped off or, in the case of poultry, plucking may be readily carried out.

According to the invention apparatus for scalding carcasses, particularly those of pigs and poultry, by means of circulating, hot, moist air comprises a suspension rail extending through the apparatus, a plurality of sections each constituting a scalding compartment and having walls containing passages therein, each section having at least one circulating fan adjacent the top thereof, to remove moist air from the section and pass it through the passages in the walls to inlet apertures adjacent a floor, and a water trough and heating means for water therein, characterised in that the sections are defined by longitudinal side walls and transverse walls and are arranged side by side and each transverse wall is formed with an aperture and the suspension rail is in the form of a track passing through the apertures in the transverse walls, and has a looped configuration with each section.

The invention is further described with reference to two embodiments illustrated in the accompanying drawings.

[Price 4s. 6d.]

Figure 1 is a side elevation of a scalding apparatus according to the invention;

Figure 2 is a plan view of the scalding apparatus shown in Figure 1;

Figure 3 is an end view of the apparatus;

Figure 4 is a partial cross-section on a larger scale, taken on the line IV—IV of Figure 1; and

Figure 5 is a horizontal section, as seen from above, taken, above the overhead trolley, through a second embodiment of a scalding device having two sections.

As can be seen from the drawings, the scalding apparatus of the invention comprises a plurality of sections, the number of sections depending on the desired capacity of the apparatus. The sections 1 to 7 form the central portion of the apparatus. They are basically alike in construction. The apparatus is terminated by sections 8 and 9, which serve as air locks and are preferably provided with means for producing a curtain of air by means of which the atmosphere inside the apparatus is sealed off from the ambient atmosphere. To create such curtains of air there are provided ventilators 10 and 11 comprising electrically driven fans.

In the embodiment shown in Figures 1, 2, 3 and 4 two suspension rails 14 pass through the apparatus and these serve to guide trolleys 20 bearing hooks 15. The terminal sections have projecting consoles 12 and 13 respectively which support the suspension rails 14 and may also accommodate the drive for the overhead trolleys. Throughout the scalding apparatus there are provided racks 16, for example stub-tooth racks, which mesh with corresponding pinions 18 mounted on the hooks 15, which are rotatable in the trolleys, by which means carcasses hanging from the hooks 15 are rotated as they pass through the apparatus. The path of rotation of the carcasses is indicated in Fig. 2 by dot-dash circles. The rack may be replaced by chains or other means for producing a rotary motion of the carcasses. The

trolleys are driven through the apparatus by means of chains extending through the apparatus in the longitudinal direction. Each driving chain 19 carries dogs 21 spaced at the most favourable intervals for series treatment of the carcasses in the apparatus. In the present embodiment, where there are two parallel suspension rails, the dogs of one driving chain are in staggered relationship to those of the other. The dogs engage pins 22 attached to the trolleys 20.

There are provided two further suspension rails 23 and 24 parallel to the apparatus, and these may be connected to the suspension rails 14 by connecting rails 25 and suitable points. In this way it is possible to return carcasses to the inlet end of the apparatus for re-scalding if they were not sufficiently scalded during their previous passage through the apparatus at the speed used.

As can be seen from the cross-section shown in Figure 4, the individual sections 1 to 7 are double-walled at the top and sides, a free space or cavity being provided between the walls 26, 27, which serves as an air circulating channel which may extend across the width of all of the sections or may be divided into separate channels in any desired manner. They may be open at the ends of the sections, if desired, so as to provide intercommunication of the channels of the individual sections.

The ceiling of the cavity accommodates a ventilator 28 comprising an electrically driven fan which is driven by an electric motor 17 and which sucks the moist air from the interior of the apparatus to blow it through the channels to the bottom thereof, where the air then re-enters the apparatus through inlet apertures 29.

Heating elements 30 are provided in the channel 40 for heating the moist air. The temperature and moisture content are measured by means of thermostats 31 and hygrometers 32, which may be used to control the heating elements.

At the bottom of the apparatus there is provided a water trough 33 having an immersion heater 34, for example a steam coil, by means of which the water is heated and evaporated to generate steam. The water trough 33 may extend uninterrupted through the entire apparatus. Alternatively, the sections may be constructed in such a manner that each has its own separate water trough. The water is fed in through pipes 35.

Above the floor and above the or each water trough of the apparatus there is provided a water deflector 36. In the present embodiment the water deflector comprises a number of plates or louvres arranged to overlap in the manner of roofing tiles with openings 37 between the points of overlap to allow upward passage of moist or steamy air. The water which condenses on the carcasses thus drips, in a more or less polluted state, on to the water

deflector and is collected in waste gutters 38, situated below the bottom edge of the lowest plates and flows out of the apparatus, thus avoiding any pollution of the water trough 33.

The air circulation described ensures that the moist air passing the carcasses is of uniform temperature and avoids overheating at any point.

Moreover, the apparatus of the invention operates at a high level of efficiency, since the moist air circulates in the apparatus and heat losses are substantially restricted only to the heat absorption of the carcasses. The sections themselves are heat-insulated from the ambient atmosphere by a layer of insulating material 39.

The carcasses move through the apparatus in the direction of the arrow of Figure 1. The section 7 next to the inlet air lock 9 may be provided with a water spray, if desired, by means of which the carcasses entering the apparatus may be initially moistened. Further, if desired, an additional section 40<sup>1</sup> may be provided in front of the air lock 9, as shown in the drawings, in which added section the carcasses will be washed.

In the embodiment shown in Figure 5 the adjacent sections 41, 42 of the scalding apparatus have insulated transverse end walls 43 provided with apertures 44 through which a suspension rail 45 may pass in and out of the apparatus. Over each of these apertures there is provided an air nozzle 46 to provide an air curtain.

In each section the suspension rail 45 runs in the form of a horizontal loop, that is, it forms two transverse parallel straight portions 47, 48 which are connected by curved portions 49, 50.

Between the sections 41 and 42 there is provided a simple partition or transverse wall 51 attached to one of the sections and provided with an aperture 52 through which the suspension rail passes from one section to the other. The end portions of the suspension rail in each section are in line, so that the sections may readily be placed together and further sections may be interposed if desired. The section 42 may be followed by a de-bristling point 53.

The driving chains for the trolleys carrying the carcasses are guided over chain wheels at the curves 49 and 50 in the usual manner.

Parallel to the straight portions 47, 48 of the suspension rail there are provided toothed racks 54 with which pinions mounted on the rotatable hooks of the trolleys can mesh. Thus, when the trolleys pass along these straight portions, the carcasses will be rotated due to meshing of the racks and the said pinions. Additional rotation is not necessary at the points where the trolleys pass along the curved portions 49 and 50, as the carcasses are in any case turned at these points.

The looped arrangement of the suspension rail in conjunction with the partition 51 pro-

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vides sections comprising substantially closed chambers or compartments in which the necessary scalding conditions may be readily maintained. This improves the scalding operation and may in some cases shorten the treatment time.

Each section is provided with at least one ventilator or circulating fan. If the sections are relatively wide, it may be advisable to use two or more ventilators to maintain uniform conditions of treatment throughout each section.

#### WHAT I CLAIM IS:—

1. Apparatus for scalding carcasses, particularly those of pigs and poultry, by means of circulating, hot, moist air comprising a suspension rail extending through the apparatus a plurality of sections each constituting a scalding compartment and having walls containing passages therein, each section having at least one circulating fan adjacent the top thereof, to remove moist air from the section and pass it through the passages in the walls to inlet apertures adjacent a floor, and a water trough and heating means for water therein, characterised in that the sections are defined by longitudinal side walls and transverse walls, and are arranged side by side and each transverse wall is formed with an aperture and the suspension rail is in the form of a track passing through the apertures in the transverse walls, and has a looped configuration within each section.

2. Apparatus as claimed in Claim 1, in which at least the top walls and side walls of each section are cavity walls, the cavities serving as the said passages for moist air circulation.

3. Apparatus as claimed in Claim 1, in which the inlet and outlet portions of the rail

in each section are disposed near a longitudinal side wall thereof.

4. Apparatus as claimed in Claim 1, in which each loop in the suspension rail comprises two straight parallel rail portions which extend transversely across the section concerned.

5. Apparatus as claimed in Claim 4, in which there are provided toothed racks parallel to the straight parallel portions of the suspension rail which extend transversely across the section and engage pinions mounted on hooks for carrying the carcasses, each hook being rotatably mounted in a trolley arranged to be driven along said suspension rail.

6. Apparatus as claimed in Claim 1, in which a deflector and a waste gutter for collecting polluted condensate is situated above the floor and above each water trough.

7. Apparatus as claimed in Claim 6, in which the deflector for polluted condensate is in the form of plates or louvres arranged to overlap in the manner of roofing tiles with openings between the points of overlap for the upward passage of moist air, the bottom edge of the lowest plate being situated above a waste gutter.

8. Apparatus for scalding carcasses, constructed, arranged and adapted to operate substantially as described herein and shown in Figures 1 to 4 or Figure 5 of the accompanying drawings.

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Coventry, Warwickshire,  
England.  
Agents for the Applicant.

Fig. 1

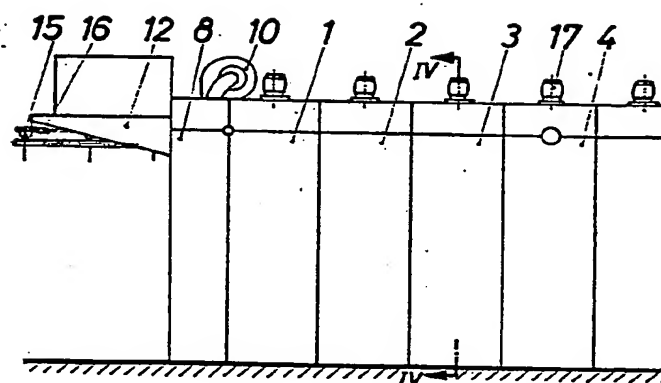
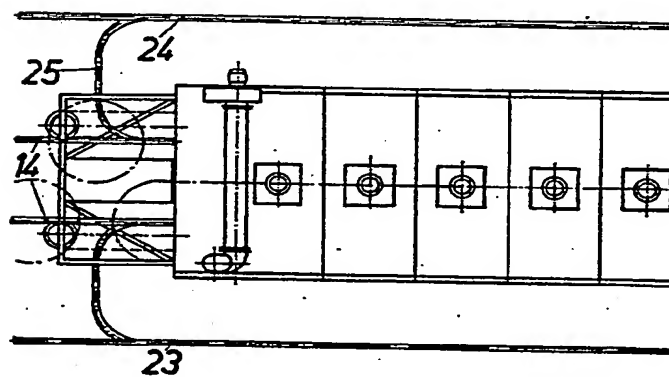


Fig. 2



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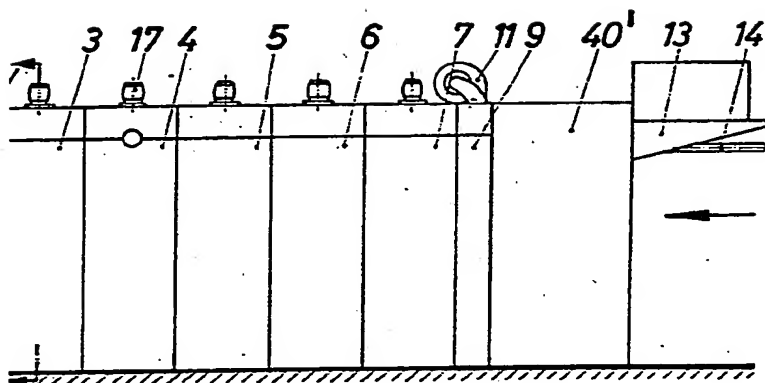
COMPLETE SPECIFICATION

3 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale*

Sheet 1

**Fig.1**



**Fig.2**

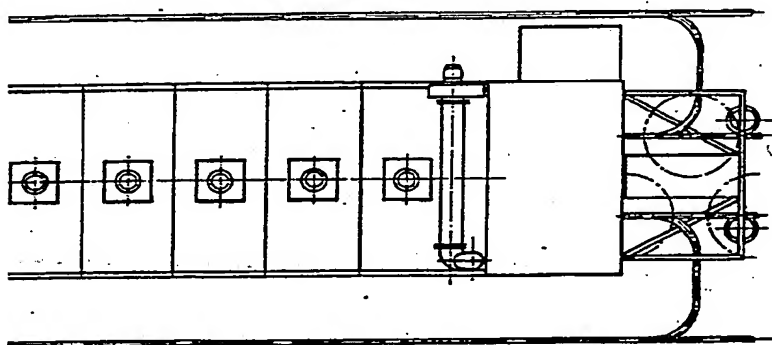


Fig.1

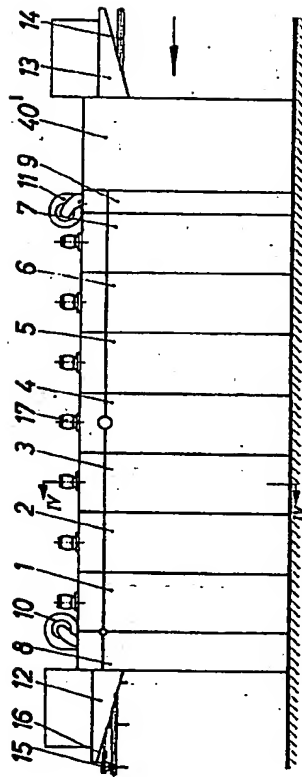


Fig.2

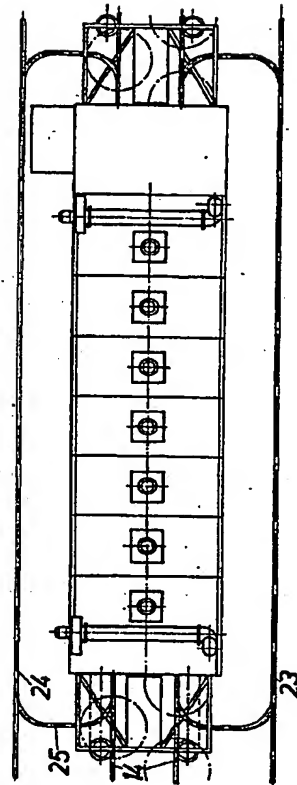


Fig.3

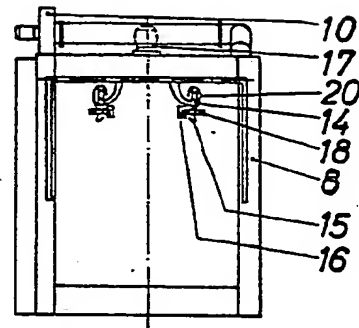
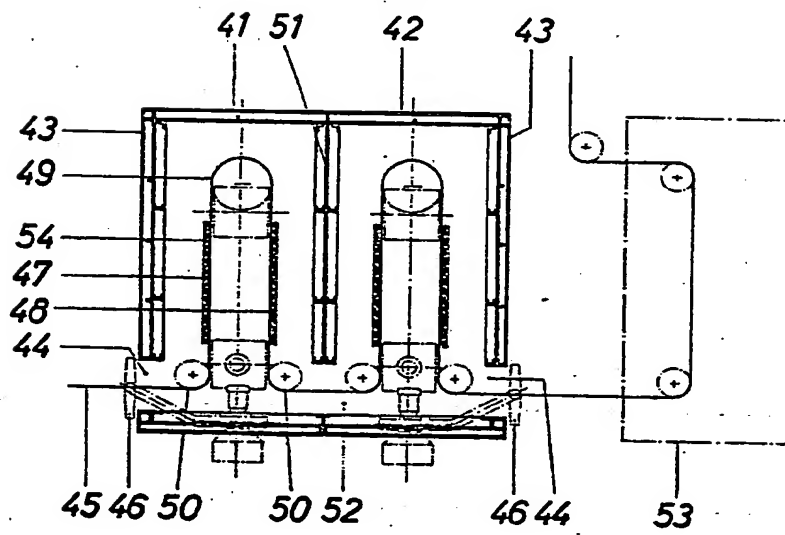


Fig.5



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3 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale*

Sheets 2 & 3

Fig. 4

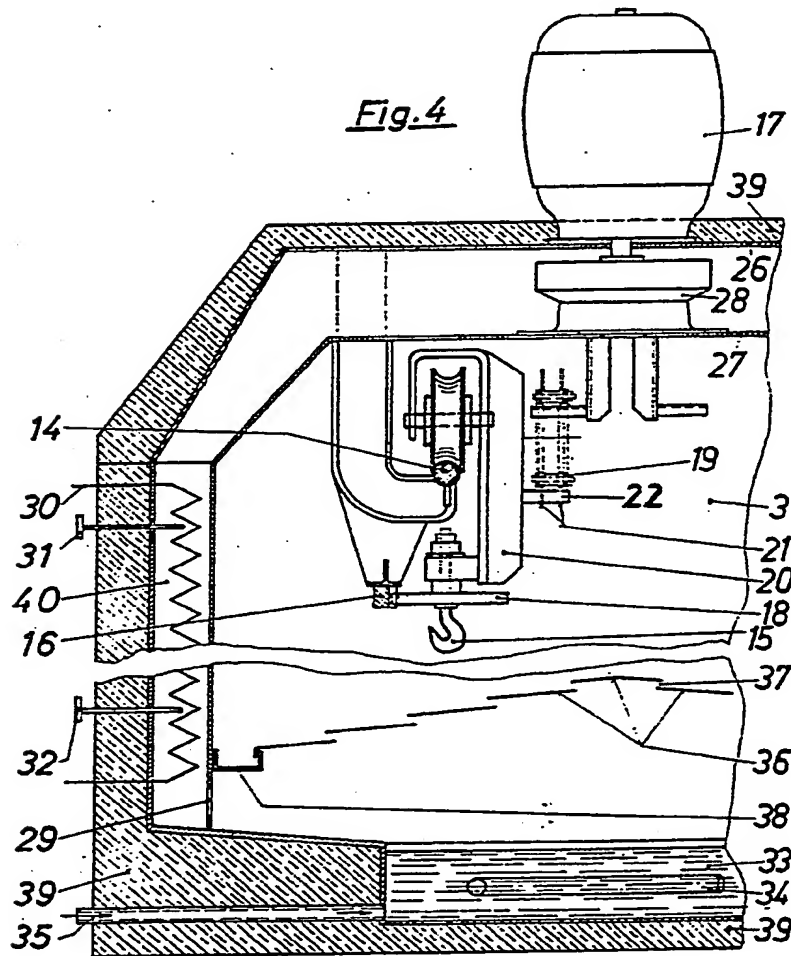


Fig.3

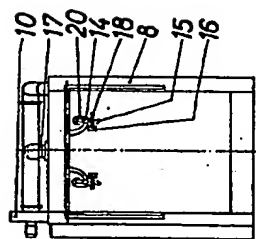


Fig.5

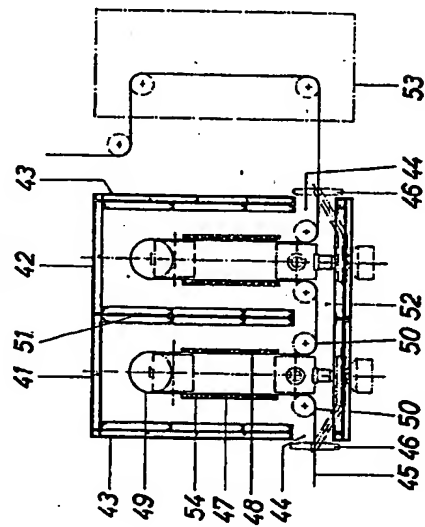


Fig.4

